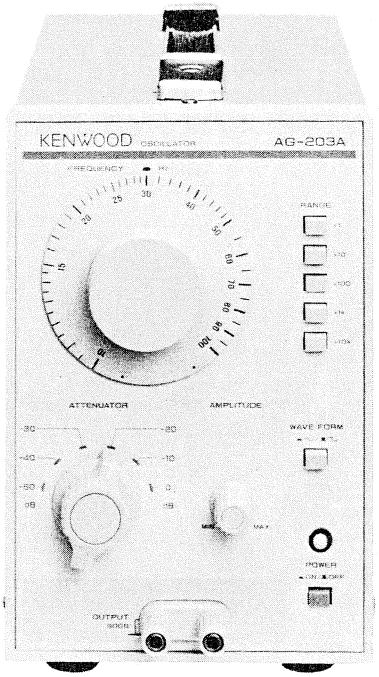
KENWOOD

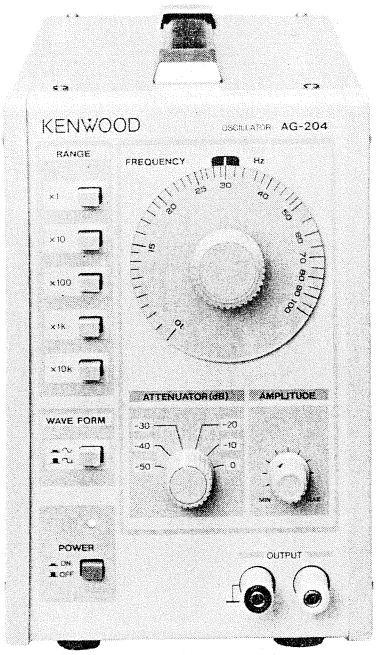
OSCILLATOR

AG-203A
AG-204

SERVICE MANUAL

KENWOOD CORPORATION





WARNING

The following instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.

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ADJUSTMENT

To obtain the best performance, periodically calibrate the unit. Sometimes, only one mode need be calibrated, while at other times, all modes should be calibrated. When one mode is calibrated, it must be noted that the other modes may be affected. When calibrating all modes, perform the calibration in the specified sequence.
The following calibration required an accurate measuring instrument and an insulated adjusting flat blade screwdriver. If they are not available, contact your dealer. For optimum adjustment, turn the power on and warm up the unit sufficiently (more than 30 minutes) before starting.
Before calibrating the unit, check the power supply voltage.

TEST EQUIPMENT REQUIRED

The following instrument or their equivalent should be used for making adjustment.

Test Equipment	Model	Maker
Multi meter	45	Fluke
Sine-Wave generator	SG-502	Tektronix
Oscilloscope	CS-4025	KENWOOD
Frequency counter	FC-758	KENWOOD
600 Ω termination		

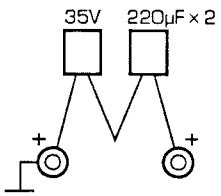
PREPARATION FOR ADJUSTMENT

Control Settings

The control settings listed below must be used for each adjustment procedure.
Exceptions to these settings will be noted as they occur. After completing a adjustment, return the controls to the following settings.

NAME OF KNOBS	POSITION
FREQUENCY	10
ATTENUATOR (dB)	0
AMPLITUDE	MAX
RANGE	x 100
WAVE FORM	~

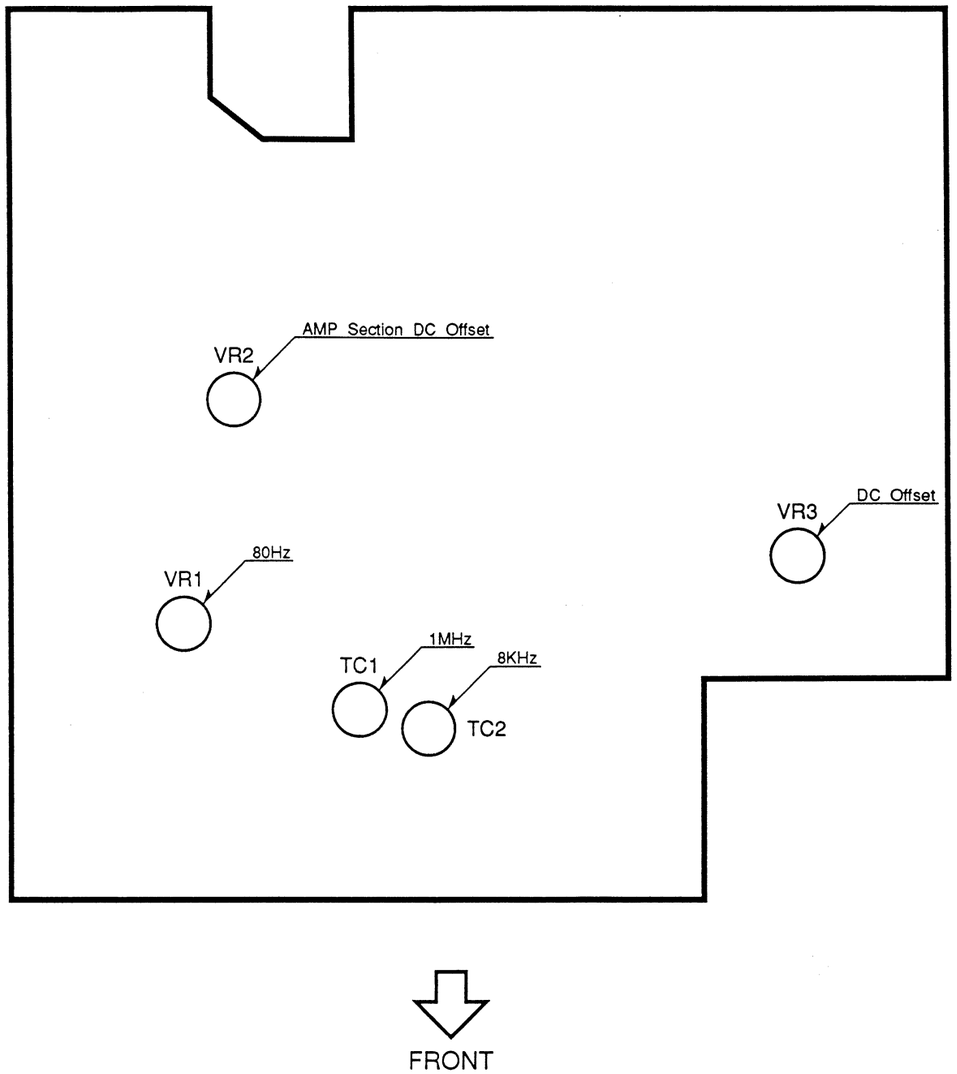
AG-203A ADJUSTMENT

Item	Adjustment VR (TC)	P.C.B.	Procedure
DC Offset	VR3	X65-1430-00	WAVE FORM: ▮ RANGE : × 10 kHz AMPLITUDE: MIN ATTENUATOR: 0 dB Dial Scale: COUNTER-CLOCKWISE Oscilloscope: 5 mV/DIV • Put a 600 Ω termination to the OUTPUT jack and connect with the oscilloscope. Adjust VR3 so that the offset becomes 0.
DC Offset	VR2		WAVE FORM: ▁ ~ RANGE: × 100 Hz AMPLITUDE: MAX ATTENUATOR: 0 dB Dial Scale: 10, Oscilloscope: 20 mV/DIV • Attach a chemical capacitor to the OUTPUT jack. Then adjust VR2 so that the DC offset voltage in the amplifier section is 0. 
2 KHz	–		WAVE FORM: ~ RANGE: × 100 Hz AMPLITUDE: MAX ATTENUATOR: 0 dB Dial Scale: 20 • Put a 600 Ω termination to the OUTPUT jack and connect the frequency counter. Secure the dial scale plate aligning 20 to the position where the frequency is between 1.99 kHz and 2.01 kHz.

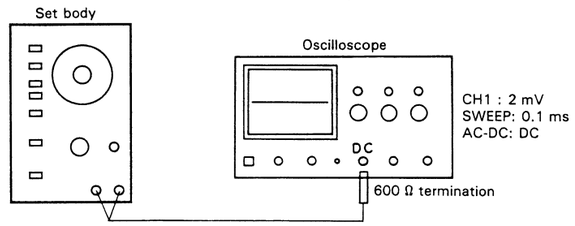
AG-203A ADJUSTMENT

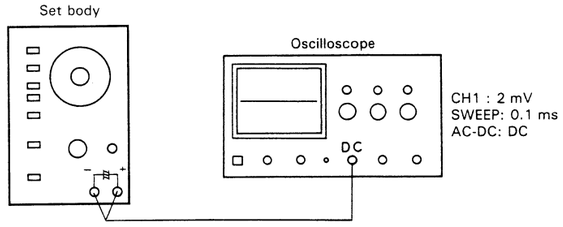
Item	Adjustment VR (TC)	P.C.B.	Procedure
8 kHz	TC2	X65-1430-00	Put the cover on the jig case and fix it tightening the screws. WAVE FORM: ~ RANGE : × 100 Hz AMPLITUDE: MAX ATTENUATOR: 0 dB Dial Scale: 80 • Put a 600 Ω termination to the OUTPUT jack and connect the frequency counter. Adjust TC2 so that the reading is between 7.96 kHz and 8.04 kHz.
80 Hz	VR1		Same as the 8 kHz adjustment, except that RANGE is × 1Hz. • Adjust VR1 so that the reading is between 79 Hz and 81 Hz.
1 MHz	TC1		Same as the 8 kHz adjustment, except that RANGE is × 10 kHz and Scale is 100. • Adjust TC1 so that the reading is between 995 kHz and 1005 kHz.

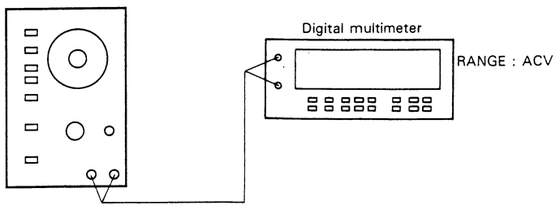
AG-203A ADJUSTMENT



AG-204 ADJUSTMENT

<table>
<tr><th>Item</th><th>Adjustment
VR (TC)</th><th>Procedure</th></tr>
<tr><td>Output amplitude offset</td><td>VR5</td><td>ATT : 0 dB, AMPLITUDE: MIX.
Scale: 10, RANGE: ×100
WAVE FORM: Sine wave, 600 Ω terminated
 

● Adjust so that the oscilloscope voltage reading is 0 V.</td></tr>
<tr><td>Offset</td><td>VR1</td><td>Same as above, except that the 600 Ω termination is not used.
 

1) Set AMPLITUDE to MAX.
2) Connect a 47 μF capacitor across the OUTPUT jacks of the set body (use care of the polarity).
3) Adjust so that the oscilloscope voltage reading is 0 V.</td></tr>
<tr><td>Output level</td><td>VR3</td><td> 

1) Remove the 47 μF (chemical capacitor) and connect a digital multimeter to the jacks.
2) Adjust so that the output voltage reads 11.00 V.</td></tr>
</table>

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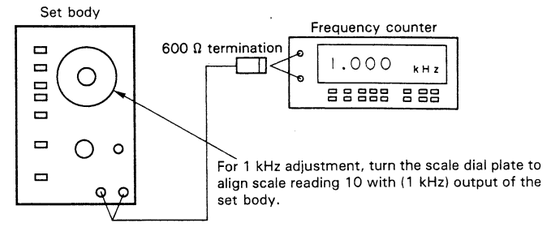
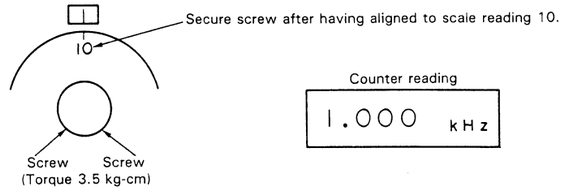
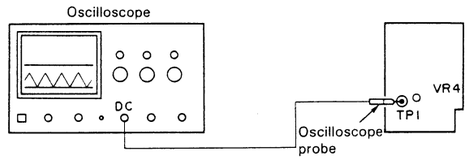
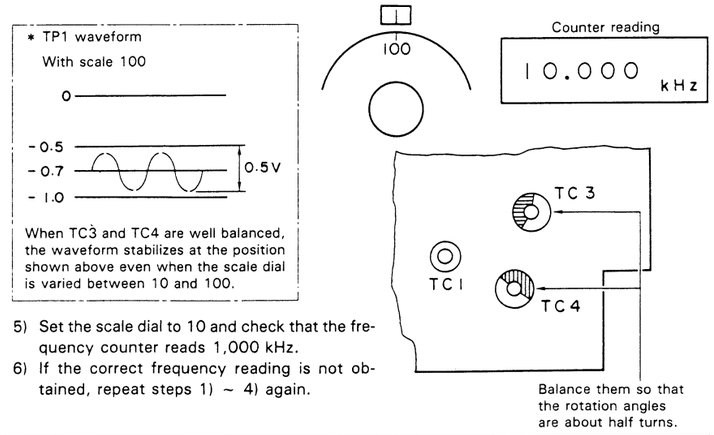
<table>
<tr><th>Item</th><th>Adjustment
VR (TC)</th><th>Procedure</th></tr>
<tr><td>1 kHz frequency
10 kHz frequency</td><td>TC3
TC4</td><td> 

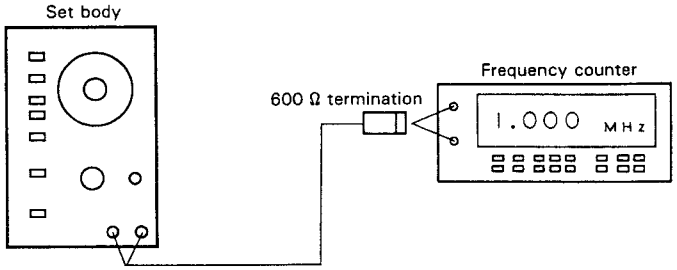
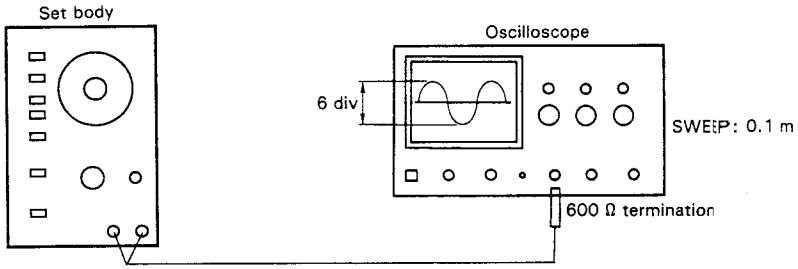
1) Turn the scale dial so that the frequency counter reads 1.000 kHz. (Ignore the reading of the scale dial plate.)
2) Taking care not to vary the frequency reading, turn the scale dial plate (by loosening the scale dial retaining screw) until the scale reading becomes 10.
 

3) After securing the dial scale plate retaining screw, turn the scale dial to read 100. Then, connect the oscilloscope probe to TP1 and perform adjustment while observing the oscilloscope waveform.
 

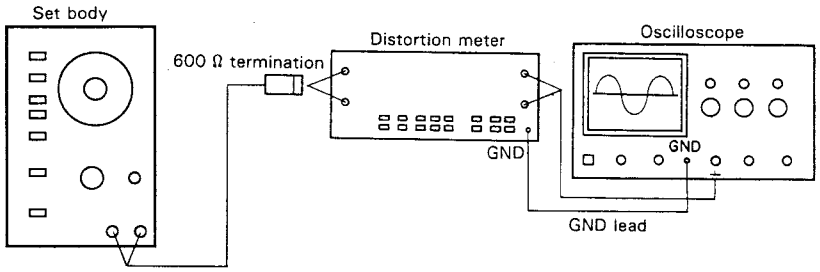
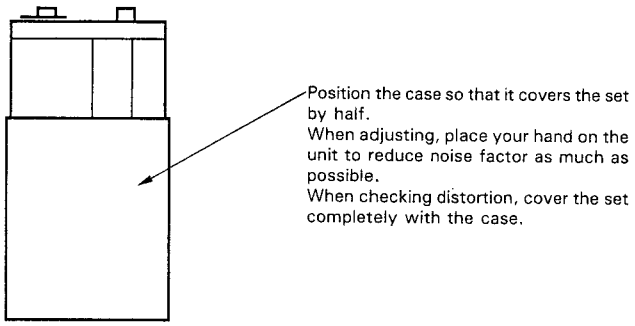
4) Adjust TC3 and TC4 while balancing them so that the frequency counter reads 10.000 kHz/
* Adjust the waveform at TP1 to about −0.7 V.
 

5) Set the scale dial to 10 and check that the frequency counter reads 1,000 kHz.
6) If the correct frequency reading is not obtained, repeat steps 1) ~ 4) again.</td></tr>
</table>

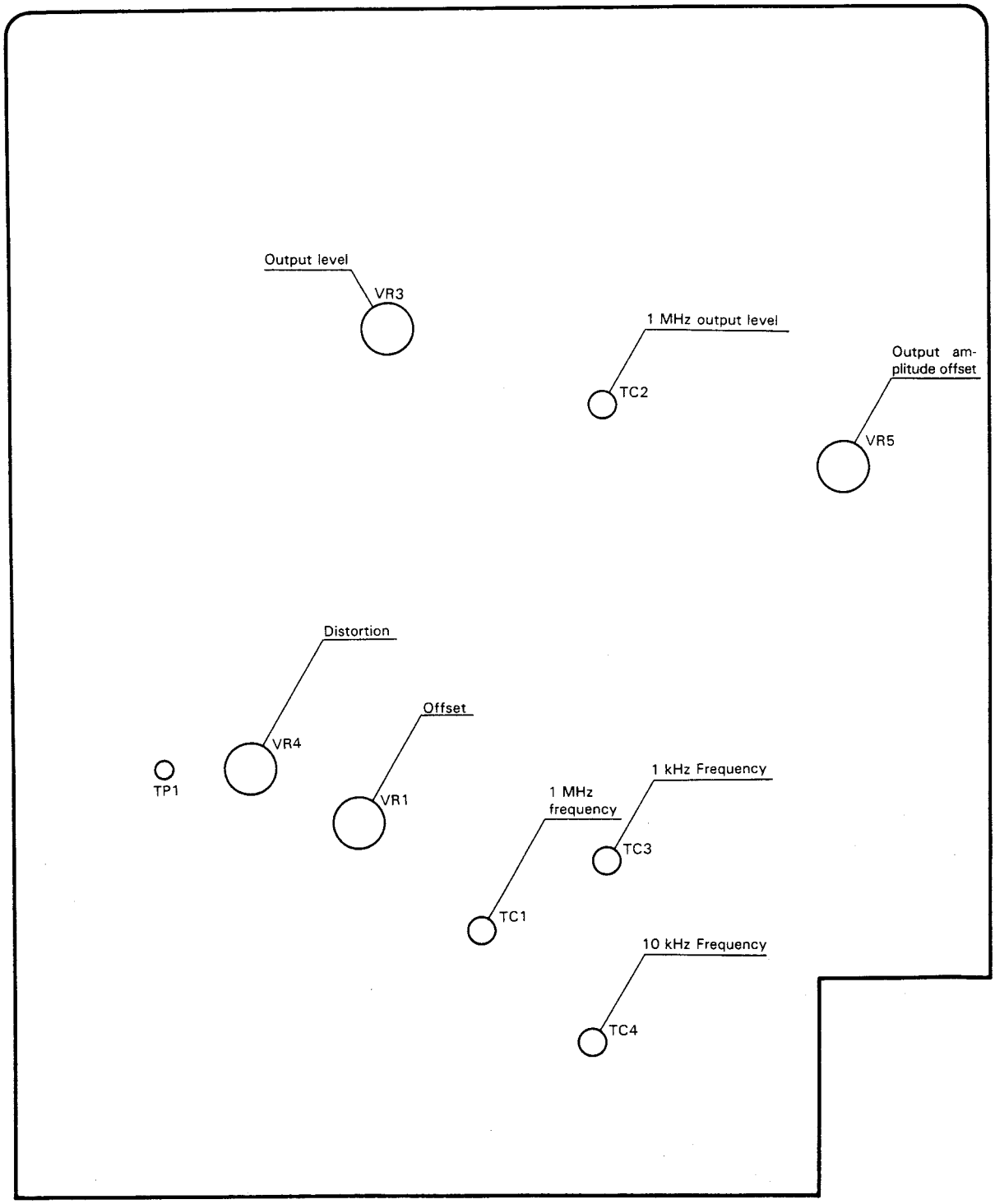
AG-204 ADJUSTMENT

Item	Adjustment VR (TC)	Procedure
1 MHz frequency	TC1	ATT : 0 dB, AMPLITUDE: MAX. Scale: 100, RANGE: × 10k WAVE FORM: Sine wave, 600 Ω terminated  Adjust so that the frequency counter reading is 1.0000 MHz.
1 MHz output level	TC2	ATT : 0 dB, AMPLITUDE: MAX. Scale: 10, RANGE: × 100 WAVE FORM: Sine wave, 600 Ω terminated  1) Apply 1 kHz sine wave to fill 6 divisions on the oscilloscope screen. (If an amplitude of 6 divisions cannot be obtained, adjust the ATT and variable controls of the oscilloscope.) 2) Then, turn the scale dial on the set body to scale 100 and set RANGE to × 10k to output 1 MHz. (Do not operate the controls on the oscilloscope.) 3) Adjust so that the amplitude on the oscilloscope screen becomes 5.8 divisions.

AG-204 ADJUSTMENT

Item	Adjustment VR (TC)	Procedure
Distortion	VR4	ATT : 0 dB, AMPLITUDE: MAX. Scale: 10, RANGE: ×100 WAVE FORM: Sine wave, 600 Ω terminated  • Adjust to the optimum point while observing the distortion meter reading and oscilloscope display waveform. 

AG-204 ADJUSTMENT



AG-203A PARTS LIST

AG-203A

Y73-1100-00

F.NO	PARTS NO	NAME & DESCRIPTION
	A01-0809-32	CASE
	A10-1409-43	CHASSIS
	A13-0702-13	FRAME
	A20-2708-13	PANEL
	A21-0811-23	DECORATIVE PANEL
	A23-1606-33	REAR PANEL
	A40-0703-33	BOTTOM PLATE
	B20-0904-54	DIAL SCALE
	B30-0902-15	LAMP
	B41-2025-04	LABEL
	B63-0070-10	INSTRUCTION MANUAL;ENG./JAP.
	D13-0502-14	BEVEL GEAR,SMALL
	D13-0503-04	BEVEL GEAR,LARGE
	D21-0901-24	SHAFT
	D23-0061-14	BEARING
	D32-0505-04	STOPPER
	E08-1081-05	VOLTAGE SELECTOR RECEPTACLE
	E09-0681-05	VOLTAGE SELECTOR PLUG
	E18-0106-05	BANANA JACK,NATURAL
	E18-0107-05	BANANA JACK,BLACK
	E18-0351-05	AC INLET 3P
	E21-0669-03	PAIR TERMINAL
	E23-0557-14	EARTH LUG
	E30-1644-15	BS POWER CORD
	E30-1818-05	JIS POWER CORD SET
	E30-1819-15	CEE POWER CORD SET
	E30-1820-05	UL/CSA POWER CORD SET
	E30-1821-05	SAA POWER CORD SET
	E31-2928-05	WIRE ASS'Y;INLET TO GND
	E38-0386-05	WIRE ASS'Y;P1 TO TRANS
	E38-0387-05	WIRE ASS'Y;P2 TO LED
	E38-0389-05	WIRE ASS'Y;P5 TO SYNC
	E38-0391-05	WIRE ASS'Y;P7 TO OUTPUT
	F05-1512-05	FUSE 0.15A
	F05-2012-05	FUSE(6X30MM) 0.2A/250V
	F06-1211-05	FUSE(5X20MM) T125MA/250V
	F10-1511-04	SHIELD PLATE
	F19-0703-04	PLATE,FOR VOLTAGE SELECTOR
	G01-0915-04	COIL SPRING
	H01-2812-24	CARTON BOX
	H10-2802-02	FOAMED STYRENE PAD
	H20-1703-04	VINYL COVER
	J02-0363-04	RUBBER FOOT,REAR
	J13-0033-15	FUSE HOLDER
	J19-1608-14	STOPPER
	J21-2877-14	BRACKET,SW
	J42-0038-04	BUSHING
	K01-0058-25	HANDLE
	K21-0908-04	KNOB,AMPLITUDE
	K21-0909-04	KNOB,ATTENUATOR
	K21-0922-03	KNOB,FREQUENCY
	K27-0504-04	BUTTON(6 USED)
	K27-0506-04	BUTTON;POWER
	L01-9026-05	POWER TRANSFORMER
	N09-0626-04	SCREW,SEMS PAN HD M3X10
	N09-0739-05	SCREW,SEMS BINDING TAPTITE 3X8
	N09-0741-04	SCREW,SEMS PAN HD M3X6
	N09-0757-05	SCREW,SEMS BINDING TAPTITE 3X6
	N10-2030-41	NUT,HEX M3
	N14-0620-05	FLANGE NUT M4
	N15-1026-41	WASHER M2.6
	N17-1030-41	LOCK WASHER M3
	N19-0703-04	WASHER M8
	N19-0704-04	WASHER M9
	N19-0709-05	WASHER M6
	N19-0715-05	NYLON WASHER M6
	N30-2606-41	SCREW,PAN HD M2.6X6
	N30-4008-41	SCREW,PAN HD M4X8
	N32-3006-41	SCREW,FLAT HD M3X6
	N33-4014-41	SCREW,OVAL HD M4X14
	N35-2608-41	SCREW, BINDING M2X4
	N88-3006-41	SCREW,FLAT HD TAPTITE 3X6
	N88-3008-41	SCREW,FLAT HD TAPTITE 3X8
	N89-3006-41	SCREW,BINDING TAPTITE 3X6
	X65-1430-00	OVERALL UNIT
	X67-1060-00	ACCESSORY CORD(CA-48)
	X81-3030-00	V.C UNIT

AG-203A OVERALL UNIT

X65-1430-00

REF.NO	PARTS NO	NAME & DESCRIPTION			
	E38-0388-05	WIRE ASS'Y;P4 TO JW4			
	E38-0390-05	WIRE ASS'Y;P6 TO JW6			
	E38-0392-05	WIRE ASS'Y;P3 TO JW3			
	J73-0148-02	PCB (UNMOUNTED)			
C1	CC45FCH1H0R5C	CAP. CERAMIC	0.5P	0.25P	50V
C2	CC45FCH1H120J	CAP. CERAMIC	12P	5%	50V
C3	CC45FCH1H080D	CAP. CERAMIC	8P	0.5P	50V
C4	CC45FCH1H0R5C	CAP. CERAMIC	0.5P	0.25P	50V
C5	CC45FCH1H030C	CAP. CERAMIC	3P	0.25P	50V
C6	CE04EW1E470M	CAP. ELECTRO	47	20%	25V
C7	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C8	CC45FCH1H060C	CAP. CERAMIC	6P	0.25P	50V
C9	NO USE				
C10	CC45FCH1H390J	CAP. CERAMIC	39P	5%	50V
C11	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C12	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C13	CC45FCH1H100D	CAP. CERAMIC	10P	0.5P	50V
C14	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C15	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C16	CC45FCH1H101J	CAP. CERAMIC	100P	5%	50V
C17	CC45FCH1H470J	CAP. CERAMIC	47P	5%	50V
C18	CE04EW1H471M	CAP. ELECTRO	470	20%	50V
C19	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C20	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C21	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C22	CC45FCH1H560J	CAP. CERAMIC	56P	5%	50V
C23	CE04EW1V222M	CAP. ELECTRO	2200	20%	35V
C24	CE04EW1V222M	CAP. ELECTRO	2200	20%	35V
C25	CQ92FM1H104K	CAP. MYLAR	0.1	10%	50V
C26	CQ92FM1H104K	CAP. MYLAR	0.1	10%	50V
C27	CE04EW1V101M	CAP. ELECTRO	100	20%	35V
C28	CE04EW1V101M	CAP. ELECTRO	100	20%	35V
C29	NO USE				
C30	CQ92FM1H223K	CAP. MYLAR	0.022	10%	50V
D1	W02G	DIODE			
D2	MTZ24JC	DIODE, ZENER	23.72V		
D3	MTZ24JC	DIODE, ZENER	23.72V		
D4	DS442X	DIODE			
D5	DS442X	DIODE			
D6	DS442X	DIODE			
D7	DS442X	DIODE			
P1	E40-3238-05	PIN CONNECTOR	3P		
P2	E40-3237-05	PIN CONNECTOR	2P		
P3	E40-3237-05	PIN CONNECTOR	2P		
P4	E40-3238-05	PIN CONNECTOR	3P		
P5	E40-3237-05	PIN CONNECTOR	2P		
P6	E40-3239-05	PIN CONNECTOR	4P		
P7	E40-3299-05	PIN CONNECTOR	2P		
Q1	2SK304(E)	FET, N-CHANNEL			
Q2	2SK304(E)	FET, N-CHANNEL			
Q3	2SC828A(Q)	TR. SI, NPN			
Q4	2SC828A(Q)	TR. SI, NPN			
Q5	2SC828A(Q)	TR. SI, NPN			
Q6	2SC828A(Q)	TR. SI, NPN			
Q7	2SA564A(Q)	TR. SI, PNP			
Q8	2SA564A(Q)	TR. SI, PNP			
Q9	2SC828A(Q)	TR. SI, NPN			
Q10	2SC828A(Q)	TR. SI, NPN			
Q11	2SC828A(Q)	TR. SI, NPN			
Q12	2SC828A(Q)	TR. SI, NPN			
Q13	2SC3419(Y)	TR. SI, NPN			
Q14	2SA1356(Y)	TR. SI, PNP			
Q15	2SD882	TR. SI, NPN			
Q16	2SB772	TR. SI, PNP			
R1	RN14BK2E4701D	RES. METAL FILM	4.7K	0.5%	1/4W
R2	RN14BK2E4701D	RES. METAL FILM	4.7K	0.5%	1/4W
R3	RN14BK2E4702D	RES. METAL FILM	47K	0.5%	1/4W
R4	RN14BK2E4702D	RES. METAL FILM	47K	0.5%	1/4W
R5	RN14BK2E4703D	RES. METAL FILM	470K	0.5%	1/4W
R6	RN14BK2E4703D	RES. METAL FILM	470K	0.5%	1/4W
R7	R92-1473-05	RES. METALGLACE	4.7M	1%	1/4W
R8	R92-1473-05	RES. METALGLACE	4.7M	1%	1/4W
R9	R92-1474-05	RES. FIXED	470M	1%	1W
R10	R92-1474-05	RES. FIXED	470M	1%	1W
R11	RD14BB2C152J	RES. CARBON	1.5K	5%	1/6W
R12	RD14BB2C102J	RES. CARBON	1K	5%	1/6W
R13	RD14BB2C471J	RES. CARBON	470	5%	1/6W
R14	RD14BB2C274J	RES. CARBON	270K	5%	1/6W
R15	RD14BB2C104J	RES. CARBON	100K	5%	1/6W

AG-203A PARTS LIST

X65-1430-00

REF.NO	PARTS NO	NAME & DESCRIPTION			
R16	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R17	RD14BB2C153J	RES. CARBON	15K	5%	1/6W
R18	RD14BB2C152J	RES. CARBON	1.5K	5%	1/6W
R19	RD14BB2C393J	RES. CARBON	39K	5%	1/6W
R20	RD14BB2C330J	RES. CARBON	33	5%	1/6W
R21	RD14BB2C271J	RES. CARBON	270	5%	1/6W
R22	RD14BB2C471J	RES. CARBON	470	5%	1/6W
R23	RD14BB2C471J	RES. CARBON	470	5%	1/6W
R24	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R25	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R26	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R27	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R28	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R29	RD14BB2E561J	RES. CARBON	560	5%	1/4W
R30	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R31	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R32	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R33	RD14BB2C473J	RES. CARBON	47K	5%	1/6W
R34	RD14BB2C562J	RES. CARBON	5.6K	5%	1/6W
R35	RD14BB2C682J	RES. CARBON	6.8K	5%	1/6W
R36	RD14BB2C362J	RES. CARBON	3.6K	5%	1/6W
R37	RD14BB2C122J	RES. CARBON	1.2K	5%	1/6W
R38	RD14BB2C562J	RES. CARBON	5.6K	5%	1/6W
R39	RD14BB2C302J	RES. CARBON	3K	5%	1/6W
R40	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R41	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R42	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R43	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R44	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R45	RD14BY2H220J	RES. CARBON	22	5%	1/2W
R46	RD14BY2H220J	RES. CARBON	22	5%	1/2W
R47	RD14BB2E122J	RES. CARBON	1.2K	5%	1/4W
R48	RD14BB2E122J	RES. CARBON	1.2K	5%	1/4W
R49	RD14BB2E222J	RES. CARBON	2.2K	5%	1/4W
R50	RN14BK2C6040F	RES. METAL FILM	604	1%	1/6W
R51	RD14BB2C101J	RES. CARBON	100	5%	1/6W
R52	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R53	RD14BB2C121J	RES. CARBON	120	5%	1/6W
R102	RN14BK2C1151F	RES. METAL FILM	1.15K	1%	1/6W
R103	RN14BK2C1151F	RES. METAL FILM	1.15K	1%	1/6W
R104	RN14BK2C8450F	RES. METAL FILM	845	1%	1/6W
R105	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R106	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R107	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R108	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R109	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R110	RN14BK2C9531F	RES. METAL FILM	9.53K	1%	1/6W
R111	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R112	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R113	RN14BK2C3650F	RES. METAL FILM	365	1%	1/6W
R114	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R115	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R116	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R117	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R118	RN14BK2C3400F	RES. METAL FILM	340	1%	1/6W
R119	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R120	RN14BK2C9531F	RES. METAL FILM	9.53K	1%	1/6W
SW1	S68-0606-05	PUSH SWITCH			
SW2	S40-1535-05	PUSH SWITCH			
SW101	S40-2506-05	PUSH SWITCH			
SW102	S01-2502-05	ROTARY SWITCH			
TC1	C05-0454-05	CAP. TRIMMER	20P		
TC2	C05-0454-05	CAP. TRIMMER	20P		
TH1	STT300H	DIODE			
VR1	R12-8001-05	RES. SEMI FIXED	2.2MB		
VR2	R12-5530-05	RES. SEMI FIXED	100KB		
VR3	R12-0575-05	RES. SEMI FIXED	100 B		
VR100	R29-2503-05	V.R.			

AG-203A V.C UNIT

X81-3030-00

REF.NO	PARTS NO	NAME & DESCRIPTION
	C02-0201-15	VARIABLE CAPACITOR
	J73-0147-03	PCB (UNMOUNTED)

AG-204 PARTS LIST

AG-204

Y73-1090-00

REF.NO	PARTS NO	NAME & DESCRIPTION
	A01-1242-02	CASE,TOP
	A01-1243-02	CASE,BOTTOM
	A13-0948-13	FRAME,SIDES
	A21-1179-12	DECORATIVE PANEL
	A22-0887-12	SUB PANEL
	A83-0012-12	REAR PANEL
	B01-0706-03	SIDE ESCUTCHEON
	B20-0935-14	DIAL SCALE
	B42-3699-04	SERIAL NO. PLATE
	B63-0037-00	INSTRUCTION MANUAL;ENG./JAP.
	C02-0201-15	VARIABLE CAPACITOR
	E18-0365-05	AC SELECTOR WITH 6X30MM FUSE
	E18-0366-15	AC SELECTOR WITH 5X20MM FUSE
	E21-0669-03	PAIR TERMINAL
	E21-0671-03	TERMINAL,BLACK
	E21-0672-03	TERMINAL,WHITE
	E29-0506-04	SHORTING BAR
	E30-1644-15	BS POWER CORD
	E30-1818-05	JIS POWER CORD SET
	E30-1819-05	CEE POWER CORD SET
	E30-1820-05	UL/CSA POWER CORD SET
	E30-1821-05	SAA POWER CORD SET
	E31-2928-05	WIRE ASS'Y;INLET TO GND
	E38-0136-15	WIRE ASS'Y;P1 TO SYNC
	E38-0137-15	WIRE ASS'Y;P8 TO OUTPUT
	F05-2012-05	FUSE(6X30MM) 0.2A/250V
	F05-2015-05	FUSE(5X20MM) T200MA/250V
	F05-3011-05	FUSE(6X30MM) 0.3A/250V
	H10-2802-02	FOAMED STYRENE PAD
	H20-1703-04	VINYL COVER
	H53-0033-14	CARTON BOX
	J02-0363-04	RUBBER FOOT,REAR
	J11-0510-04	CABLE CLAMP
	J19-1620-05	CORD KEEP
	J30-0633-04	SPACER
	J61-0408-05	WIRE WRAPPING BAND
	K01-0544-05	HANDLE
	K21-0908-04	KNOB;AMPLITUDE
	K21-0912-03	KNOB,FREQUENCY
	K21-0914-03	KNOB,ATTENUATOR
	K27-0504-04	BUTTON(6 USED)
	K27-0506-04	BUTTON;POWER
	L01-9954-15	POWER TRANSFORMER
	N09-0654-05	SCREW,SEMS PAN HD M4X8
	N09-0739-05	SCREW,SEMS BINDING TAPTITE 3X8
	N09-0742-04	SCREW,SEMS PAN HD M3X8
	N09-0777-05	SCREW,SEMS PAN HD M4X6
	N10-2030-41	NUT,HEX M3
	N17-1030-41	LOCK WASHER M3
	N19-0720-05	PLAIN WASHER D=11.8MM,T=1MM
	N30-2606-41	SCREW,PAN HD M2.6X6
	N30-3010-41	SCREW,PAN HD M3X10
	N88-2008-41	SCREW, FLAT HD TAPTITE 2X8
	N88-3008-41	SCREW,FLAT HD TAPTITE 3X8
	N89-3008-41	SCREW,BINDING TAPTITE 3X8
	W02-2026-05	V.C UNIT
	X65-1390-01	OVERALL UNIT
	X67-1060-00	ACCESSORY CORD(CA-48)

AG-204 OVERALL UNIT

X65-1390-01

REF.NO	PARTS NO	NAME & DESCRIPTION			
	E38-0131-15	WIRE ASS'Y;P2 TO JW2			
	E38-0132-15	WIRE ASS'Y;P3 TO JW3			
	E38-0133-15	WIRE ASS'Y;P4 TO JW4			
	E38-0134-05	WIRE ASS'Y;P5 TO JW5			
	E38-0135-15	WIRE ASS'Y;P6 TO JW6			
	F10-1636-03	SHIELD PLATE;FOR MAIN UNIT			
	F10-1637-04	SHIELD PLATE;FOR ATTENUATOR			
	J25-5397-23	PCB (UNMOUNTED)			
C1	CE04EW1A101M	CAP. ELECTRO	100	20%	10V
C2	CE04EW1A101M	CAP. ELECTRO	100	20%	10V
C3	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C4	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C5	CM93BD2A680J	CAP. MICA	68P	5%	100V
C6	CE04EW1C220M	CAP. ELECTRO	22	20%	16V
C7	CE04EW1H010M	CAP. ELECTRO	1	20%	50V
C8	CE04EW1C100M	CAP. ELECTRO	10	20%	16V
C9	CE04EW1C101M	CAP. ELECTRO	100	20%	16V
C10	CE04EW1C470M	CAP. ELECTRO	47	20%	16V
C11	CE04EW1C100M	CAP. ELECTRO	10	20%	16V
C12	CC45FCH1H100D	CAP. CERAMIC	10P	0.5P	50V
C13	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C14	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C15	NO USE				
C16	CC45FCH1H070D	CAP. CERAMIC	7P	0.5P	50V
C17	CE04EW1H102M	CAP. ELECTRO	1000	20%	50V
C18	CE04EW1H102M	CAP. ELECTRO	1000	20%	50V
C19	CE04EW1V471M	CAP. ELECTRO	470	20%	35V
C20	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C21	CE04EW1V471M	CAP. ELECTRO	470	20%	35V
C22	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C23	CM93BD2A060D	CAP. MICA	6P	0.5P	100V
C24	CM93BD2A060D	CAP. MICA	6P	0.5P	100V
C25	CK45FB1H222K	CAP. CERAMIC	2200P	10%	50V
C26	CM93BD2A681J	CAP. MICA	680P	5%	100V
C27	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C28	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C29	CE04EW1V100M	CAP. ELECTRO	10	20%	35V
C30	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C31	CE04EW1H4R7M	CAP. ELECTRO	4.7	20%	50V
C32	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C33	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C34	CE04EW1V101M	CAP. ELECTRO	100	20%	35V
C35	CE04EW1V101M	CAP. ELECTRO	100	20%	35V
C36	CC45FCH1H040C	CAP. CERAMIC	4P	0.25P	50V
C37	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C38	CE04EW1V101M	CAP. ELECTRO	100	20%	35V
C39	CK45F1H473Z	CAP. CERAMIC	0.047		50V
C40	CC45FCH1H220J	CAP. CERAMIC	22P	5%	50V
C41	CE04EW1E471M	CAP. ELECTRO	470	20%	25V
D1	DS442X	DIODE			
D2	DS442X	DIODE			
D3	DS442X	DIODE			
D4	DS442X	DIODE			
D5	DS442X	DIODE			
D6	DS442X	DIODE			
D7	D2SBA40	DIODE,BRIDGE			
D100	AR4133S	LED;RED			
P1	E40-3237-05	PIN CONNECTOR	2P		
P2	E40-3237-05	PIN CONNECTOR	2P		
P3	E40-3237-05	PIN CONNECTOR	2P		
P4	E40-3237-05	PIN CONNECTOR	2P		
P5	E40-3237-05	PIN CONNECTOR	2P		
P6	E40-3240-05	PIN CONNECTOR	5P		
P7	E40-3238-05	PIN CONNECTOR	3P		
P8	E40-3299-05	PIN CONNECTOR	2P		
Q1	2SK304(E)	FET, N-CHANNEL			
Q2	NO USE				
Q3	2SK192A(GR)	FET, N-CHANNEL			
Q4	2SK192A(GR)	FET, N-CHANNEL			
Q5	2N3906RLRA	TR, SI, PNP			
Q6	2N3906RLRA	TR, SI, PNP			
Q7	2SC828A(Q)	TR. SI, NPN			
Q8	2SA564A(Q)	TR. SI, PNP			
Q9	2SK30ATM(GR2)	FET, N-CHANNEL			
Q10	2N3906RLRA	TR, SI, PNP			
Q11	2N3906RLRA	TR, SI, PNP			
Q12	2SC828A(Q)	TR. SI, NPN			
Q13	2SC828A(Q)	TR. SI, NPN			
Q14	2SA564A(Q)	TR. SI, PNP			

AG-204 PARTS LIST

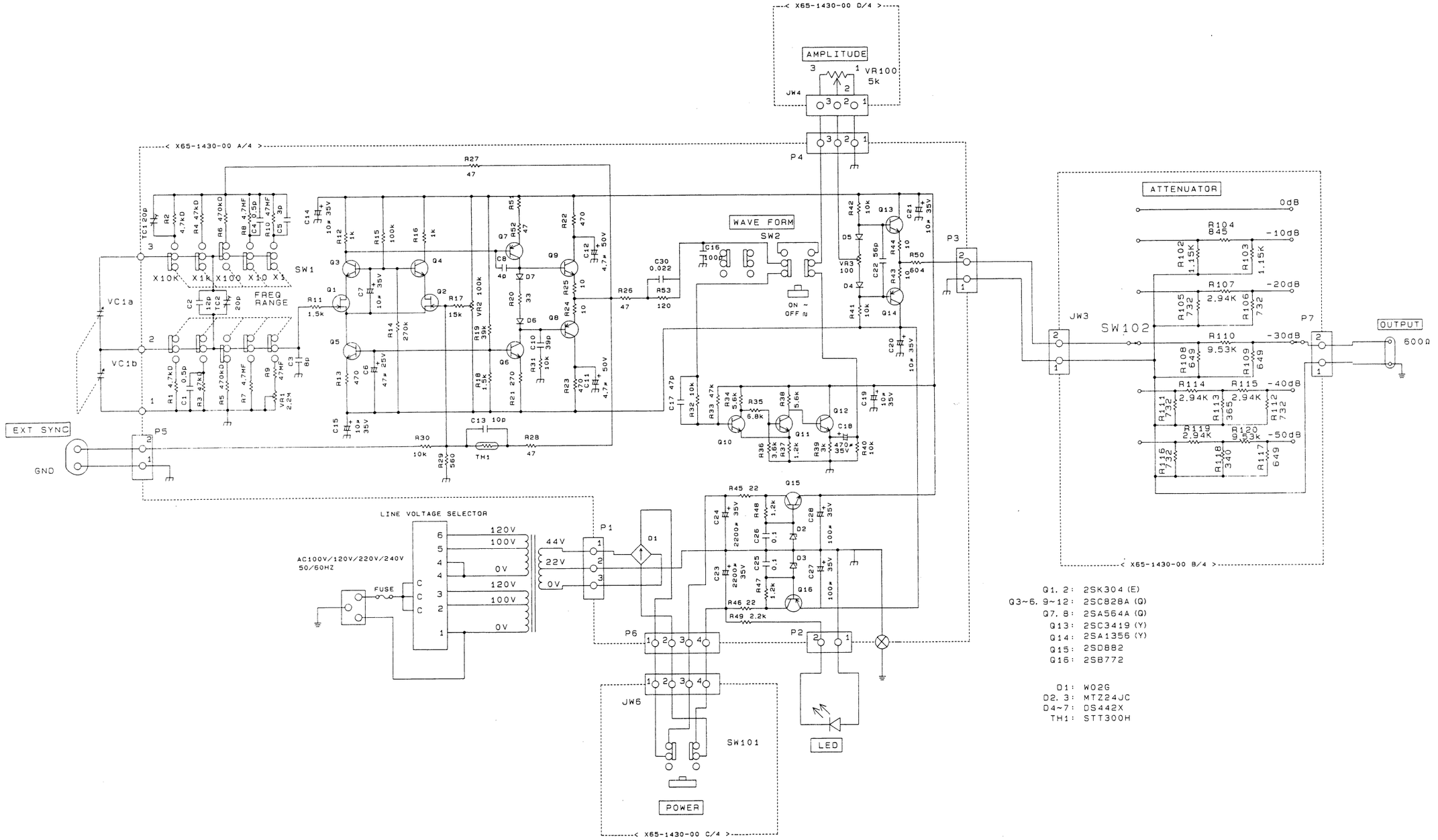
X65-1390-01

REF.NO	PARTS NO	NAME & DESCRIPTION			
Q15	2SC752GTM(O)	TR. SI, NPN			
Q16	2SC752GTM(O)	TR. SI, NPN			
Q17	2SC828A(Q)	TR. SI, NPN			
Q18	2SC828A(Q)	TR. SI, NPN			
Q19	2SA564A(Q)	TR. SI, PNP			
Q20	2SC828A(Q)	TR. SI, NPN			
Q21	2SC1226(Q)	TR. SI, NPN			
Q22	2SA699(Q)	TR. SI, PNP			
Q23	2SK304(E)	FET, N-CHANNEL			
R1	RN14BK2E2941D	RES. METAL FILM	2.94K	0.5%	1/4W
R2	RD14BB2E2R2J	RES. CARBON	2.2	5%	1/4W
R3	RN14BK2E1501D	RES. METAL FILM	1.5K	0.5%	1/4W
R4	RN14BK2E2001D	RES. METAL FILM	2K	0.5%	1/4W
R5	RN14BK2E9100D	RES. METAL FILM	910	0.5%	1/4W
R6	RN14BK2E2002D	RES. METAL FILM	20K	0.5%	1/4W
R7	RN14BK2E1912D	RES. METAL FILM	19.1K	0.5%	1/4W
R8	RN14BK2E2003D	RES. METAL FILM	200K	0.5%	1/4W
R9	RN14BK2E2003D	RES. METAL FILM	200K	0.5%	1/4W
R10	RN14BK2E2004F	RES. METAL FILM	2M	1%	1/4W
R11	RN14BK2E2004F	RES. METAL FILM	2M	1%	1/4W
R12	R92-1470-05	RES. METALGLACE	20M	1%	1/2W
R13	R92-1470-05	RES. METALGLACE	20M	1%	1/2W
R14	NO USE				
R15	RD14BB2E822J	RES. CARBON	8.2K	5%	1/4W
R16	RD14BB2E822J	RES. CARBON	8.2K	5%	1/4W
R17	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R18	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R19	RN14BK2E4641F	RES. METAL FILM	4.64K	1%	1/4W
R20	RD14BB2E471J	RES. CARBON	470	5%	1/4W
R21	RD14BB2E471J	RES. CARBON	470	5%	1/4W
R22	RD14BB2E100J	RES. CARBON	10	5%	1/4W
R23	RD14BB2E100J	RES. CARBON	10	5%	1/4W
R24	RD14BB2C101J	RES. CARBON	100	5%	1/6W
R25	RD14BB2C104J	RES. CARBON	100K	5%	1/6W
R26	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R27	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R28	RN14BK2C8200F	RES. METAL FILM	820	1%	1/6W
R29	RD14BB2C393J	RES. CARBON	39K	5%	1/6W
R30	RD14BB2C473J	RES. CARBON	47K	5%	1/6W
R31	RD14BB2C101J	RES. CARBON	100	5%	1/6W
R32	RD14BB2C822J	RES. CARBON	8.2K	5%	1/6W
R33	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R34	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R35	RD14BB2C153J	RES. CARBON	15K	5%	1/6W
R36	RD14BB2C392J	RES. CARBON	3.9K	5%	1/6W
R37	RD14BB2C683J	RES. CARBON	68K	5%	1/6W
R38	RD14BB2E223J	RES. CARBON	22K	5%	1/4W
R39	RD14BB2C223J	RES. CARBON	22K	5%	1/6W
R40	RD14BB2C154J	RES. CARBON	150K	5%	1/6W
R41	RD14BB2C331J	RES. CARBON	330	5%	1/6W
R42	RD14BB2C221J	RES. CARBON	220	5%	1/6W
R43	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R44	RD14BB2E753J	RES. CARBON	75K	5%	1/4W
R45	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R46	RD14BB2C153J	RES. CARBON	15K	5%	1/6W
R47	RD14BB2C224J	RES. CARBON	220K	5%	1/6W
R48	RD14BB2C331J	RES. CARBON	330	5%	1/6W
R49	RN14BK2C4701F	RES. METAL FILM	4.7K	1%	1/6W
R50	RN14BK2C5601F	RES. METAL FILM	5.6K	1%	1/6W
R51	RD14BB2C561J	RES. CARBON	560	5%	1/6W
R52	RD14BB2C561J	RES. CARBON	560	5%	1/6W
R53	RD14BB2C332J	RES. CARBON	3.3K	5%	1/6W
R54	RD14BB2C101J	RES. CARBON	100	5%	1/6W
R55	RD14BB2C392J	RES. CARBON	3.9K	5%	1/6W
R56	RD14BB2C561J	RES. CARBON	560	5%	1/6W
R57	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R58	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R59	RD14BB2C392J	RES. CARBON	3.9K	5%	1/6W
R60	RD14BB2C392J	RES. CARBON	3.9K	5%	1/6W
R61	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R62	RD14BB2C273J	RES. CARBON	27K	5%	1/6W
R63	RN14BK2C4701F	RES. METAL FILM	4.7K	1%	1/6W
R64	RD14BB2C561J	RES. CARBON	560	5%	1/6W
R65	RD14BB2C561J	RES. CARBON	560	5%	1/6W
R66	RD14BB2C221J	RES. CARBON	220	5%	1/6W
R67	RD14BB2C221J	RES. CARBON	220	5%	1/6W
R68	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R69	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R70	RD14BB2C272J	RES. CARBON	2.7K	5%	1/6W
R71	RD14BB2C332J	RES. CARBON	3.3K	5%	1/6W
R72	RD14BB2C105J	RES. CARBON	1M	5%	1/6W
R73	RN14BK2C6040F	RES. METAL FILM	604	1%	1/6W

X65-1390-01

REF.NO	PARTS NO	NAME & DESCRIPTION			
R74	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R75	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R76	RN14BK2C68R0F	RES. METAL FILM	68.0	1%	1/6W
R77	NO USE				
R78	RD14BB2C222J	RES. CARBON	2.2K	5%	1/6W
R83	RD14BB2C680J	RES. CARBON	68	5%	1/6W
R86	RN14BK2C6800F	RES. METAL FILM	680	1%	1/6W
R102	RN14BK2C1151F	RES. METAL FILM	1.15K	1%	1/6W
R103	RN14BK2C1151F	RES. METAL FILM	1.15K	1%	1/6W
R104	RN14BK2C8450F	RES. METAL FILM	845	1%	1/6W
R105	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R106	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R107	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R108	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R109	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R110	RN14BK2C9531F	RES. METAL FILM	9.53K	1%	1/6W
R111	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R112	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R113	RN14BK2C3650F	RES. METAL FILM	365	1%	1/6W
R114	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R115	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R116	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R117	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R118	RN14BK2C3400F	RES. METAL FILM	340	1%	1/6W
R119	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R120	RN14BK2C9531F	RES. METAL FILM	9.53K	1%	1/6W
S1	S40-6503-05	PUSH SWITCH			
S2	S42-5511-05	PUSH SWITCH			
SW100	S01-2502-05	ROTARY SWITCH			
SW200	S40-2506-05	PUSH SWITCH			
TC1	C05-0472-05	CAP. TRIMMER	6PF TO 50PF		
TC2	C05-0472-05	CAP. TRIMMER	6PF TO 50PF		
TC3	C05-0478-05	CAP. TRIMMER	1.4PF TO 10PF		
TC4	C05-0478-05	CAP. TRIMMER	1.4PF TO 10PF		
TH1	SDT02	THERMISTOR			
TH2	SDT02	THERMISTOR			
TP1	E23-0401-05	PIN TERMINAL			
U1	NJM78M24FA	IC,3-TERMINAL REGULATOR			
U2	NJM79M24FA	IC,3-TERMINAL REGULATOR			
VR1	R12-1545-05	RES. SEMI FIXED	1KB		
VR2	NO USE				
VR3	R12-1546-05	RES. SEMI FIXED	2KB		
VR4	R12-3550-05	RES. SEMI FIXED	20KB		
VR5	R12-5530-05	RES. SEMI FIXED	100KB		
VR100	R01-2523-05	V.R.			

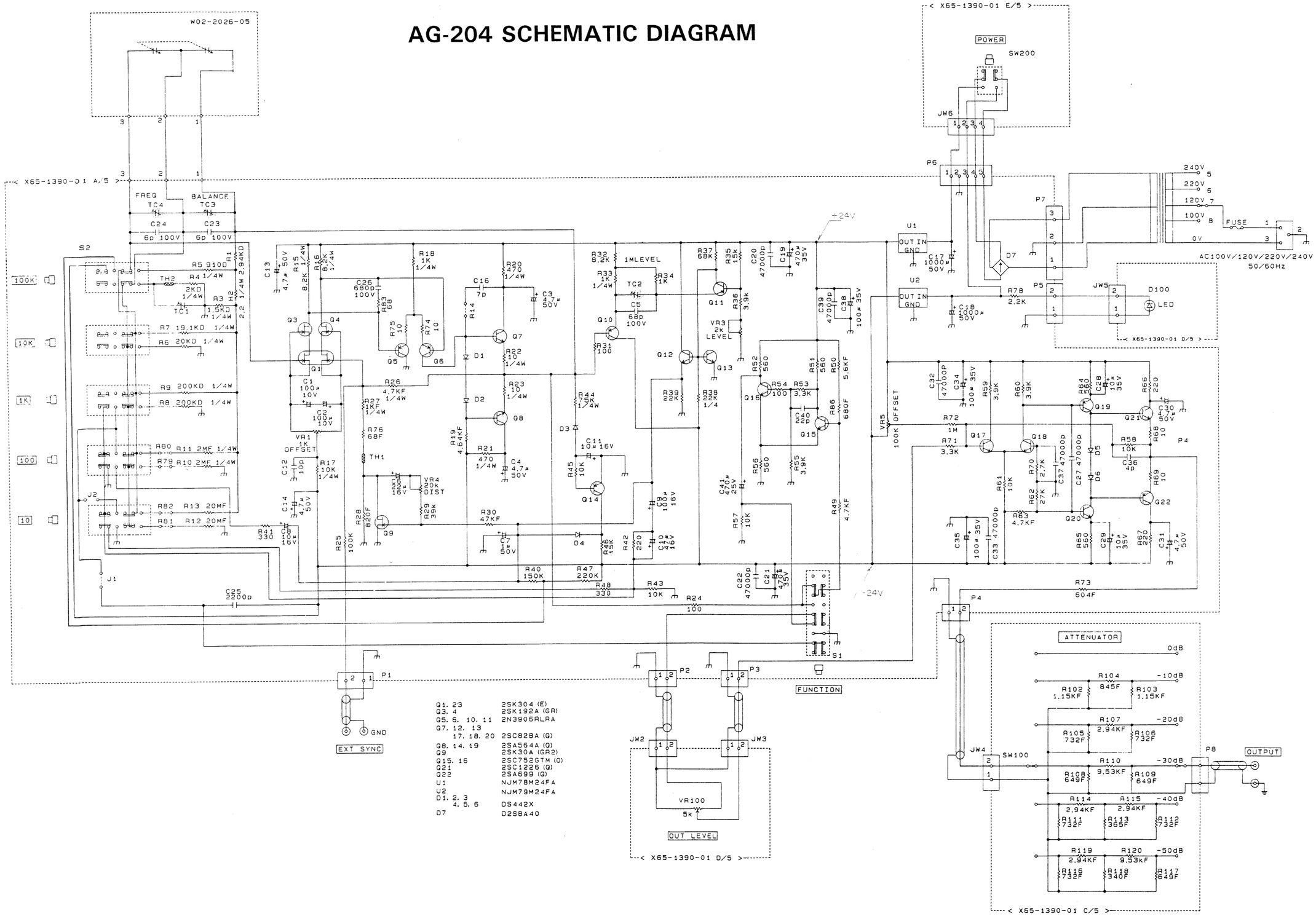
AG-203A SCHEMATIC DIAGRAM



Q1, 2: 2SK304 (E)
Q3~6, 9~12: 2SC828A (Q)
Q7, 8: 2SA564A (Q)
Q13: 2SC3419 (Y)
Q14: 2SA1356 (Y)
Q15: 2SD882
Q16: 2SB772

D1: W02G
D2, 3: MTZ24JC
D4~7: DS442X
TH1: STT300H

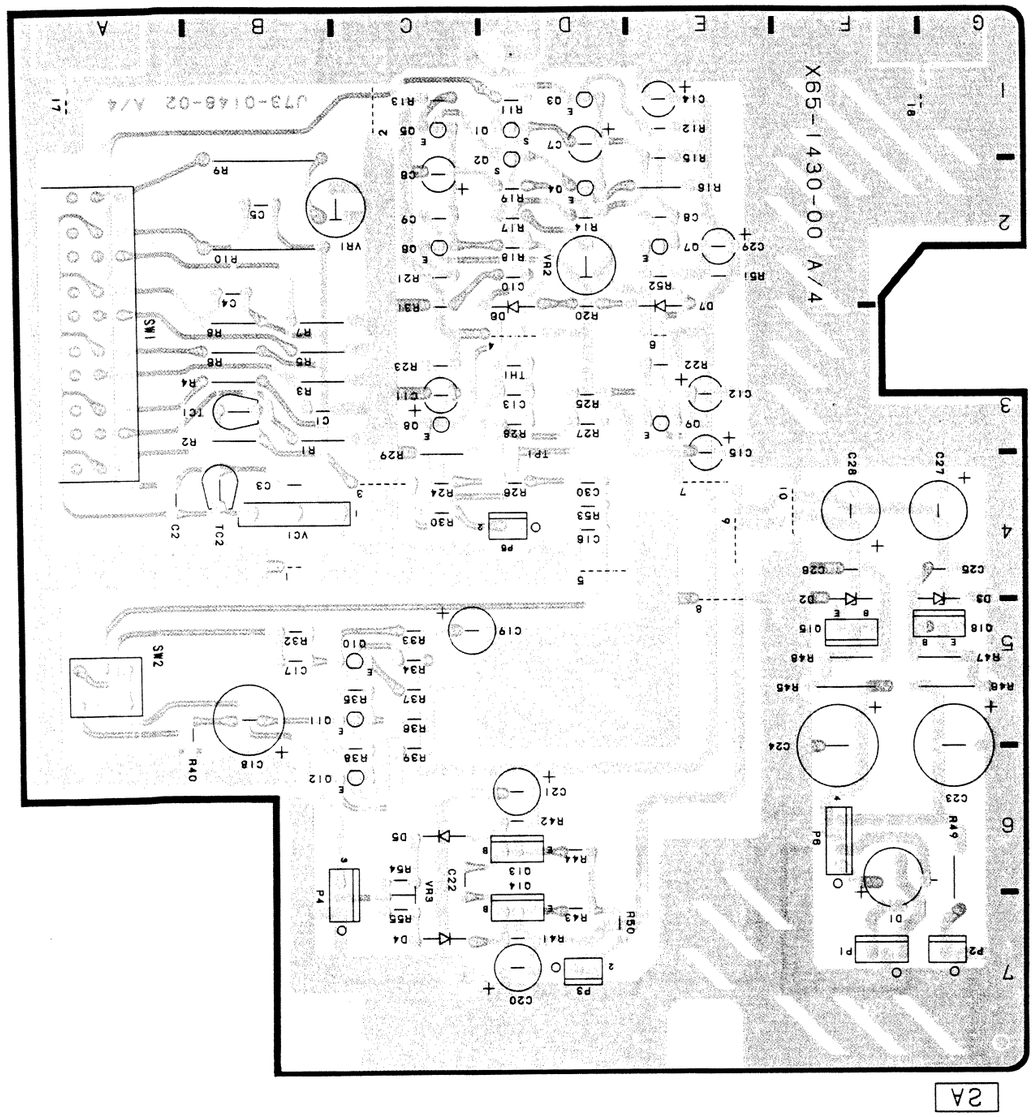
AG-204 SCHEMATIC DIAGRAM



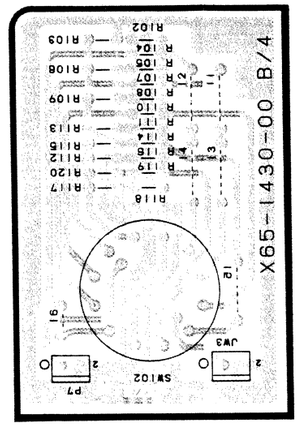
AG-203A P.C. BOARD

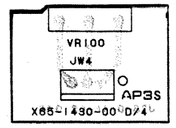
OVERALL UNIT (X65-1430-00)

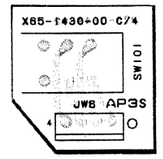
Pattern side view



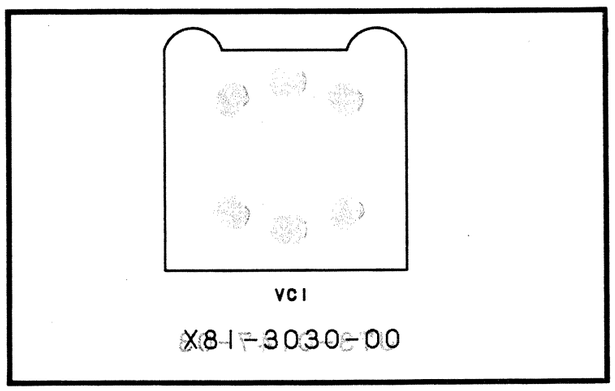
Pattern side view







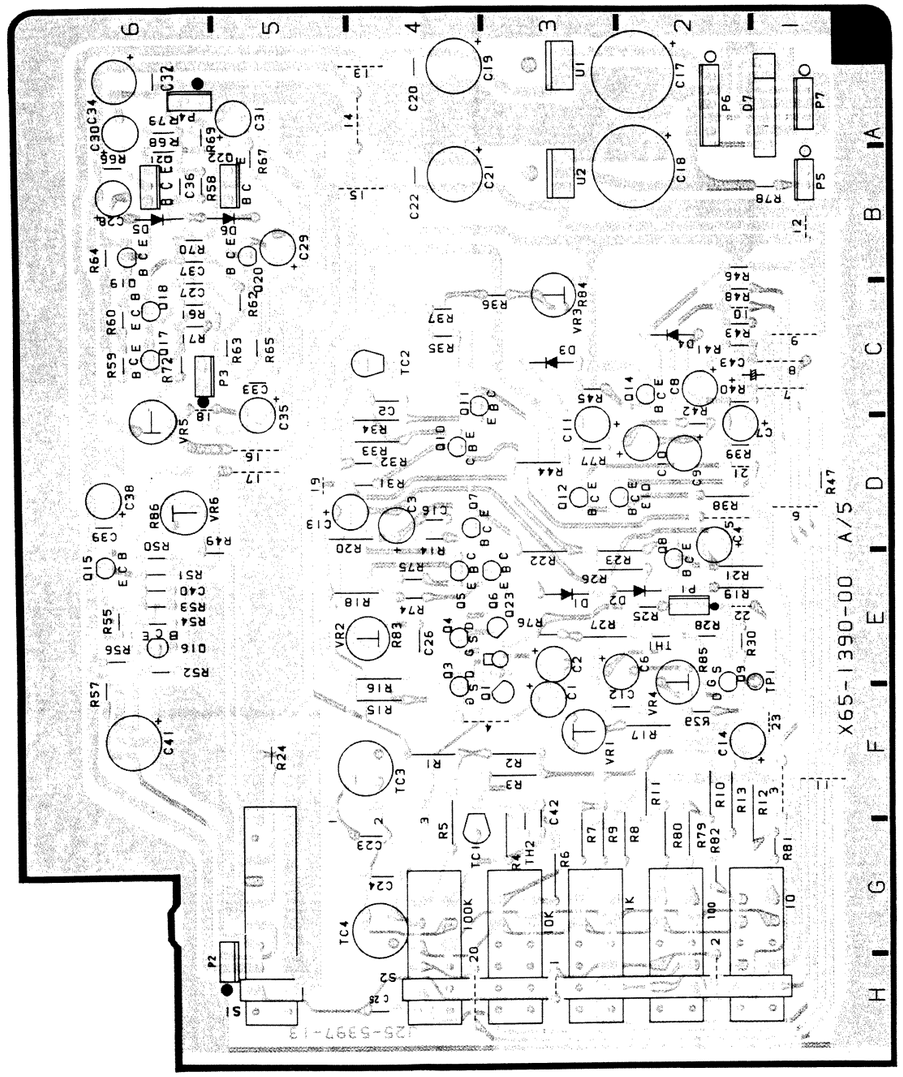
V.C UNIT (X81-3030-00)



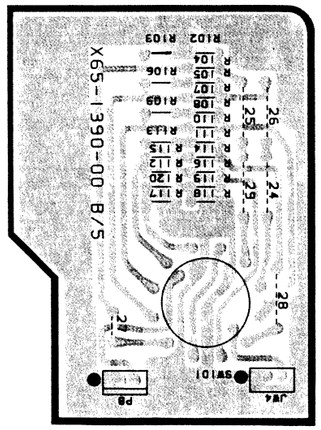
AG-204 P.C. BOARD

OVERALL UNIT (X65-1390-01)

Pattern side view



Pattern side view



Pattern side view